

THE MALE GENITALIA OF *DROSOPHILA POPULI* WHEELER AND THROCKMORTON (DIPTERA; DROSOPHILIDAE)

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The species *Drosophila populi* was described by Wheeler and Throckmorton earlier in this publication. The male genitalia show a number of unusual features which should be described as a supplement to their description.

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External genital apparatus.—Genital arch (Fig. 1) dark brown, broad and convex below, the undermargin sclerotized, the heel triangular. Lower portion of arch with about 10 bristles, the upper portion with about 38 hairs. Primary clasper (Fig. 1) dark brown, with a prominent thumb-like process and with 10–11 long primary brownish black teeth; inner surface of clasper with usually two fine bristles and about six short but stout bristles. Bridge (Fig. 2) connecting the clasper (decasternum of Okada, 1954) brown, elongate, and proximally with triangular lateral pieces; median piece rodlike, orange brown.

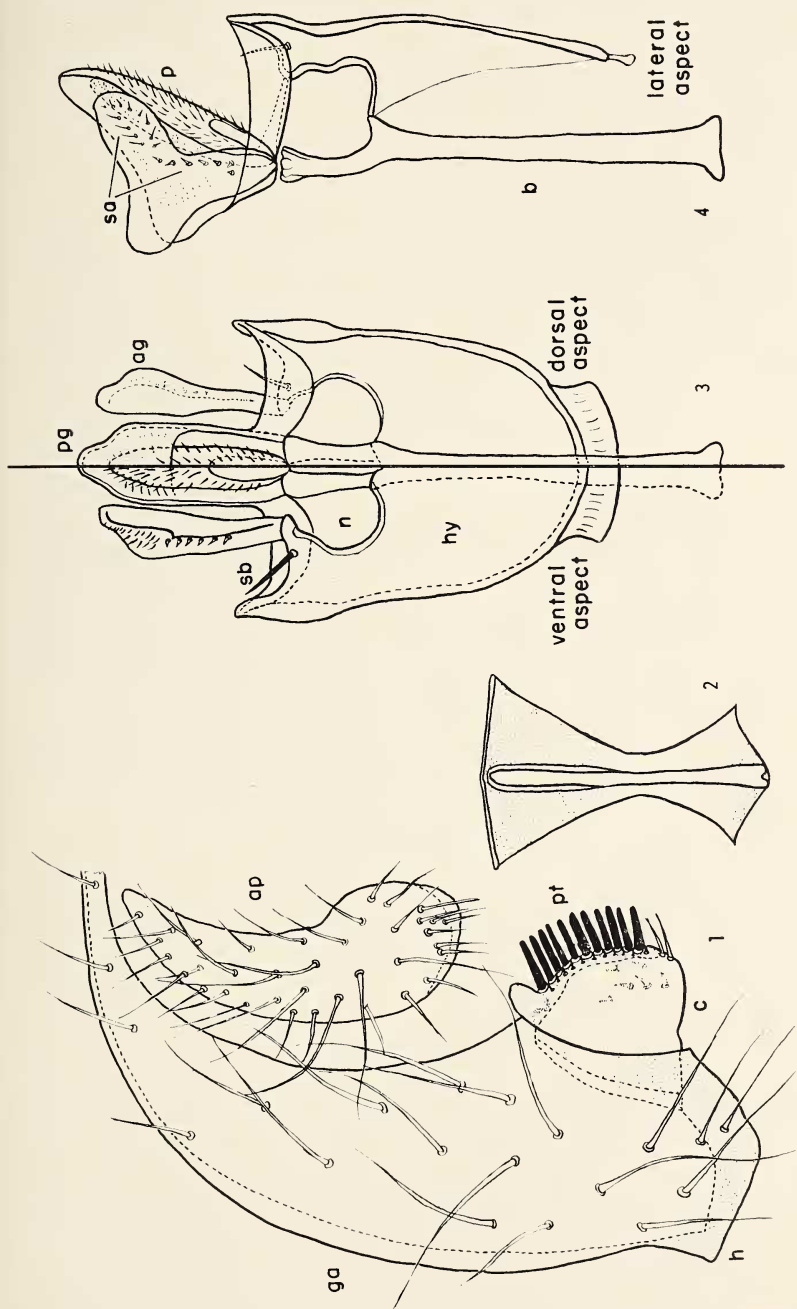
EXPLANATION OF PLATE

Figs. 1–4, Male genitalia of *Drosophila populi*. Fig. 1, External genital apparatus. Fig. 2, Bridge (decasternum) connecting the claspers. Fig. 3, Male copulatory organs, ventral aspect (left side) and dorsal aspect (right side). Fig. 4, Male copulatory organs, lateral aspect.

Abbreviations: *ap*, anal plate; *ga*, genital arch; *c*, clasper; *h*, heel; *pt*, primary teeth; *ag*, anterior gonapophysis; *pg*, posterior gonapophysis; *hy*, hypandrium; *n*, median notch of hypandrium; *sb*, submedian spine of hypandrium; *p*, penis; *sa*, sensilla of anterior gonapophysis; *b*, basal apodeme of penis.

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Copulatory organs.—Penis (Fig. 4) pale brown, oblong, with numerous hairy structures. Anterior gonapophyses (Fig. 3) yellowish brown, curved ventrally, rounded apically, the outer surface of the upper portion with about 20 stout hairs and medially with a row of about seven spines. Posterior gonapophyses as long as the anterior ones, the fused upper portion of the inner surface with many hairy structures, separated from the penis, and surrounding the dorsal surface of the latter.

Hypandrium brown and quadrate, nearly as long as broad, the median notch deep and broad. Phallosomal index (Okada 1953; a ratio between the length of the penis and its apodeme) about 0.5.

Discussion.—The morphological differences described by Wheeler and Throckmorton in this same issue of the Bulletin and the present study show that *Drosophila populi* is distinct from all the other known species of the genus, and that it is probably related to the subgenus *Sophophora*. To discuss the relationships of species on the basis of only a few organs can be dangerous, but it is allowable when one is dealing with the male genitalia which is composed of several morphologically distinct elements. Similar conclusions were reached by others who have studied male genitalia, for example: Salles (1947), Malogolowkin (1948, 1952, 1953), Nater (1953), Burla (1956), Spassky (1957) and also Hsu (1949) from his study of the external genital apparatus. Extensive comparative studies of the copulatory organs have also been done by Okada (1953, 1954, 1955, 1956).

Although the present species has a relatively small phallosomal index, separated anal plate, distinct anterior gonapophyses with sensilla, and some features of the bridge connecting the claspers, each of which is characteristic of the *obscura* group of *Sophophora*, it does not agree with any of the known species of this group, having clearly fused upper portion of the posterior gonapophyses, penis with hairy structures, deep median notch of the hypandrium and thick anterior gonapophyses. Thus the present species should be placed near the *obscura* species group of the subgenus *Sophophora*, genus *Drosophila*.

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